

# Knowledge Attitude and Factors Responsible for and Vitamin D and Calcium Deficiency among Youth

Dr. Uzma Aijaz, Prof. Ramesh K. Goyal

School of Allied Health Sciences, Delhi Pharmaceutical Sciences and Research University, New Delhi, India

## ABSTRACT

**Introduction:** Vitamin D deficiency is associated with osteoporosis in the elderly and rickets in children, it is also linked to increase the risk of certain cancers, cardiovascular diseases, diabetes type1, immunity and also having an impact on various other health conditions. Evidence has shown that vitamin D plays a vital role in calcium and bone metabolism and maintaining serum calcium levels.

**Evidence Acquisition:** This paper intend to review the Knowledge Attitude and Factors Responsible for Vitamin D and Calcium Deficiency among Youth. And the relationship of vitamin d deficiency on various chronic diseases and other health problems that is faced by human being. Information used in this review article is mainly obtained from scientific electronic academic journal database. For writing a review on this paper more than 10 studies have been reviewed using electronic data base, i.e., google scholar, PubMed, Medline, Elsevier, WHO, science direct.

**Result:** Poor vitamin D status or vitamin d deficiency is almost commonly reported across all age groups with 95.7 % neonates (new born), 75 % adults and 67 % pregnant women their (serum 25 hydroxy )vitamin D levels < 50 nmol/L (deficient). Those Children and adults whose exposed to sunlight, or living in rural having better vitamin D status, especially in summer months. Despite adequate sunshine in Asian countries they are reported to have a poor vitamin D status their regions. Data to describe the extent of vitamin D deficiency most Asian countries at the population level, including India, are limited.

**Conclusion:** India being with a large country covering several latitudes, ethnicities, cultures, traditions, and attitudes, the current data about vitamin D status in India is insufficient and classified in different ways, making analysis difficult, and is unreliable with about half the data comes from Delhi. There are Lack of conclusive data emphasizes the need for state-specific data on the vitamin D status.

**KEYWORDS:** vitamin D, calcium, deficiency, sun exposure, knowledge, awareness, epidemic

## 1. INTRODUCTION

Vitamin D deficiency means that your body is not getting sufficient vitamin D to remain healthy. Vitamin D helps your body absorb calcium. Vitamin D and K and they play a central role in metabolism of calcium. Vitamin D stimulates the production of vitamin K-dependent proteins. Calcium is one of the important building blocks of bone. Vitamin D also involve to play a role in your nervous, muscle, and immune systems. Vitamin D is playing the active role in the regulation of calcium and phosphorus which supports cellular processes, bone mineralization and neuromuscular function. Evidence has revealed that adequate levels of vitamin D can prevent multiple bone disorders such as rickets in children; and osteoporosis in adults. [1] You can mainly get vitamin D in three ways: through your skin, from your diet, and from supplements. Your body makes vitamin D naturally after exposure to sunlight. But an excessive amount of sun exposure can lead to skin aging and skin carcinomas, so many people get their vitamin D from other sources than sun. Researchers are researching on vitamin D for its

connections to several medical conditions, including diabetes, hypertension, cancer, and autoimmune conditions such as multiple sclerosis. They are trying to do more research before they will understand the consequences of vitamin D on these conditions. Vitamin D that are naturally present in foods are insufficient for body needs, therefore the main sources of Vitamin D is obtained from cutaneous synthesis through sunlight exposure. Hence, insufficiency of sunlight exposure is the leading cause of vitamin D deficiency. Thus, vitamin D status is affected by day-to-day outdoor activities, proportion of body surface exposed to sunlight, seasons and geographic latitude. Vitamin D deficiency is believed to be a widespread public health problem globally in all age groups; it is more prevalent in places with limited sun exposure. Evidence has shown that vitamin D plays a vital role in calcium and bone metabolism and maintaining serum calcium levels. Vitamin D help in intestinal calcium absorption through induction of the synthesis of calcium binding protein and stimulates bone

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mineralization; along with the parathyroid hormone it stimulates osteoclast genesis to enable the mobilization of calcium from bone reserves and to promote reabsorption of calcium filtrate in the renal tubule, decreasing its urinary excretion. (WHO) Despite of advancement in medical sciences still Vitamin D deficiency is undertreated and underdiagnosed [2] Vitamin D and Calcium are essential nutrients for optimal bone health [3]. They will be obtained from the diet, but vitamin D is usually acquired through cutaneous synthesis when human skin is irradiated with ultraviolet B (280-320 nm). The recommended dietary intakes of calcium (1000 mg/day) and vitamin D (600 IU/per) is required to maintain bone health in human adults are well-established [4]. The reference for dietary intake of calcium and vitamin D was given by Institute of Medicine are followed globally. However, calcium and vitamin D deficiency is still remaining as a worldwide epidemic. Although the tropical Asian countries receiving abundant sunlight, the problem and matter of vitamin D deficiency does exist.[5] Pregnant and lactating women have a higher requirement for vitamin D and calcium to supply for their babies and themselves The Asians face unique challenges in prevention of calcium and vitamin D deficiency. There is an increasing number of young adults in Southeast Asia countries working indoor because of rapid economic development besides, dark skin pigmentation also put Asian adults at risk of vitamin D deficiency. [6].The students are having unhealthy eating habits due to lack of time, either living in a hostel, or skipping important meals like breakfast and lunch, irregular meal timings and unhealthy food choices like snacks and fast food or junk food, known to lead to major mal- or undernutrition problems. Lacking knowledge and practice towards vitamin D, as well as environmental, biological and socio-economic factors resulting in sun-avoidance behaviour, sedentary indoor lifestyle, and increased screen-based activities are the main reasons for Vitamin D deficiency (VDD). [7] Vitamin D deficiency in India is going to significantly contribute to the huge burden on the healthcare system of India. Cultural and social taboos often elaborate lifestyle patterns such as clothing that may limit sun exposure and vegetarianism which certainly limits vitamin D rich dietary options. Mostly Indians are vegetarians and the socioeconomically backward people constitute a large percentage of the population in India. The underprivileged generally suffer from overall poor nutrition. Vitamin D rich dietary sources are limited and unaffordable to most Indians. [8]

The requirement of vitamin D you need every day depends on your age. The recommended amounts, in international units (IU), are

- A. Birth to 12 months: 400 IU
- B. Children 1-13 years: 600 IU
- C. Teens 14-18 years: 600 IU
- D. Adults 19-70 years: 600 IU
- E. Adults 71 years and older: 800 IU
- F. Pregnant and breastfeeding women: 600 IU

People who are at high risk of vitamin D deficiency need more amount than recommended dose.

The recommended daily intake (RDI) of calcium is

- A. 1,000 mg per day for adults,
- B. women above 50 years and everyone above 70 years should get 1,200 mg per day,

- C. While children under the aged 4-18 are advised to consume 1,300 mg.
- D. However, majority of the population doesn't meet their calcium needs through their diet.

## 2. EVIDENCE ACQUISITION

This paper intend to review the Knowledge Attitude and Factors Responsible for Vitamin D and Calcium Deficiency among Youth. And the relationship of vitamin d deficiency on various chronic diseases and other health problems that is faced by human being. Information used in this review article is mainly obtained from scientific electronic academic journal database. For writing a review on this paper more than 10 studies have been reviewed using electronic data base, i.e., google scholar, PubMed, Medline, Elsevier, WHO, science direct.

## RESULT

As we know Dairy products are a good source of dietary calcium but it is prevalent as most of the Asians are lactose intolerance [9] [10]. With this there is lack of information on the daily recommended calcium intake might prevent Asians from obtaining sufficient calcium. A cross-sectional survey conducted on 1475 Thai adults aged 20 years or above expressed a positive attitude towards the essential role of calcium in health and the need to fulfil the intake requirement [11]. Across ethnicities, the subject's milk associated with musculoskeletal benefits but its thought that it is more important for the boys. The Asian adolescent girls attitude of towards milk was less negative [12] Vitamin D deficiency is common in people with youth-onset of diabetes [13] There are data which cover many parts of the country but are not representative for all states. Vitamin D supplements Use was either absent or not reported in the majority of the studies. [14] In a study conducting in India in which 48% of respondents incorrectly identified that sunlight that passed through glass is a source of vitamin D. some responded says Milk/dairy products (22.6%) and eggs (8.33%) were the sources of vitamin D rich foods by few students. Many respondents able to identify at least one correct source of vitamin D (30.9%), 17% believed that green leafy vegetables are rich in vitamin D. 34.9% of the respondents were aware that calcium supplementation is important in treatment of vitamin D deficiency. [15]

In another study conducting in Ajman University in UAE 390 female medical students of Pharmacy (194) and Dentistry (196) were enrolled. The majority of the student were in their 1st - 2nd-year (63.3%). The majority of the female students having white color skin (70.3%), while 79.2% are covering themselves according to Islamic religious belief. Most students are residing in a flat (78.2%), and the rest of them living in villas with a garden (21.8%). Approximately 42% of the participants were diagnosed with vitamin D deficiency. 60% of the students feel often tired and 40.8% complain for having pain or weakness in muscles and bones. 97.9% participants were aware that sunlight is main sources of vitamin D, 65.9% avoided exposure from the sun by covering themselves with cloths or sunscreen every day. 35% of the responded exposed themselves to the sun in summer and fall. Students are having sufficient knowledge about vitamin D deficiency but there is lack between practice and knowledge, behavior. [17] In another study conducting in Malaysia in which 90.5% of the respondents have heard about Vitamin D. About 78.0% of participants showed

limited knowledge regarding some aspects of Vitamin D with (mean  $\pm$  SD = 1.78  $\pm$  0.894). And there was a negative attitude towards Vitamin D and sunlight exposure. Approximately 70.0% of the participants did not like to expose themselves to sunlight. And 30.0% of the participants had taken Vitamin D supplement before. [18]

The novel SARS-CoV-2 virus causes COVID-19 and has resulted in 6.6 million confirmed cases and more than 393,000 deaths. A recent review suggested using vitamin D loading doses of 200,000–300,000 IU in 50,000-IU capsules to reduce the risk and severity of COVID-19 [19][20]. that vitamin D deficiency has been found to contribute to acute respiratory distress syndrome; and that case-fatality rates increase with age and with chronic disease comorbidity, both of which are associated with lower 25(OH)D concentration. The Lancet paper speculates vitamin D deficiency as one of the possible reasons for death rates across different countries. It cited an observational study published in the journal Aging Clinical and Experimental Research that used data from 20 European countries. According to that the average vitamin D levels are low in Italy and Spain. Surprisingly, these countries have witnessed high coronavirus death rates compared to north European countries. North Europeans have comparatively high levels of vitamin D from the consumption of cod liver oil and vitamin D supplements

## CONCLUSION

Asians especially Indian have certain negative attitudes towards calcium rich foods, especially when comes to dairy products, either due to the prevalence of lactose intolerance, or absence of family motivation and dislike driven by taste and misconceptions. Although they are willing to take supplementation but they are not equipped with the knowledge of daily recommended calcium and vitamins intake often resulting in under supplementation. Similarly, they are having a negative attitude towards sun exposure, mostly driven by aesthetic reasons and fear of cancer of skin. These negative attitudes of people should be corrected through public health education to ensure sufficient intake of calcium and vitamin D level in preventing health problems.

The findings provided a piece of real-world evidence regarding the lack of knowledge, lack of awareness and practices and importance of vitamin D among the general public. Therefore, extensive health educational campaigns for the public should be implemented by the government to increase their knowledge regarding the importance of Vitamin D.

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